

1. A semi-crystalline, largely isotropic, porous coal-based product produced from particulate coal of a small diameter, having a density of between about 0.1 and about 0.8 g/cm₃ and a thermal conductivity below about 1 W/m/°K.

2. The porous coal-based product of claim 1 having a compressive strength below about 6000 psi. *0.5, 1.5 1st full P*

3. The porous coal-based product of claim 1 that has been carbonized. *2000°C*

further subjected to carbonization at 1000°C and @ 1200°C

4. The porous coal-based product of claim 1 that has been graphitized. *P. 10 P. 3*

further subjected to graphitization at 1100°C - @ 3000°C in helium or argon gas

5. A method for producing a porous coal-based product from coal comprising:

A) comminuting said coal to a small particle size to form a ground coal;

B) placing said ground coal in a *sealed* mold;

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C) *controlled* heating said ground coal in said mold under a non-oxidizing atmosphere to a temperature of between *gas selected from He, H₂, Argon, CO₂ etc*

about 300° C and about 700° C and soaking at this temperature for a period of from about 10 minutes to about 12 hours to form a preform; and

D) controllably cooling said preform.

cl. 8 limitation

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6. The method of claim 5 wherein said inert atmosphere is applied at a pressure of from about 0 psi up to about 500 psi.
7. The method of claim 5 wherein said temperature is achieved using a heat-up rate of between about 1° C to about 20° C per minute.
8. The method of claim 5 wherein said controlled cooling is accomplished at a rate of less than about 10° C/min to a temperature of about 100° C.
9. The laminated sheet product of claim 13 wherein said skins comprise a member selected from the group consisting of aluminum, steel, polymer sheet, fiber reinforced polymer sheet and paper.
10. The laminated sheet product of claim 13 wherein said carbon foam core has been carbonized.
11. The laminated sheet product of claim 13 wherein said carbon foam core is graphitized.
13. ^{light weight} A laminated sheet ^{products P. 1} comprising:
- A) a pair of skins laminated to either side of;

- B) a carbon foam core of a semi-crystalline, largely isotropic, porous coal based product produced from particulate coal exhibiting a free swell index of between about 3.5 and about 5.0 and of a small diameter, having a density of between about 0.1 and about 0.8 g/cm³ and a thermal conductivity below about 1 W/m°K.**

compressive strength of